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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/763,686   | 01/23/2004  | Motoharu Tanizawa    | 5000-5141           | 9107             |
| 27123  | 7590        | 04/18/2007           | EXAMINER            |                  |
| MORGAN & FINNEGAN, L.L.P.<br>3 WORLD FINANCIAL CENTER<br>NEW YORK, NY 10281-2101 |             |                      | IP, SIKYIN          |                  |
|  |             | ART UNIT             | PAPER NUMBER        |                  |
|  |             | 1742                 |                     |                  |

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE  | DELIVERY MODE |
|--|------------|---------------|
| 3 MONTHS                               | 04/18/2007 | PAPER         |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 10/763,686             | TANIZAWA ET AL.     |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Sikyin Ip              | 1742                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 2/2/07; 2/26/07.
- 2a) This action is **FINAL**.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1,3,4,7 and 8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1,3,4 and 7-8 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2/26/07.
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 7-8 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

~~in paragraph [0022].~~ Claim 7 has been amended to recite "a molten alloy having a liquidus temperature or more." Support for this amendment can be found in the Specification at page 6 in paragraph [0015]. ~~Claim 8 has been amended to correct punctuation. Applicants submit that no~~" But,

support for said limitation cannot be found. See [0015] below.

[0015] The present inventors first thought of narrowing the solidification temperature width of magnesium alloys in order to inhibit the casting cracks. The solidification temperature width is the temperature difference between the liquidus temperature at which molten metals start solidifying and the solidus temperature at which molten metals complete solidifying. When the solidification temperature width is narrowed, it is possible to effect advantages in inhibiting the casting cracks because the shrinkage stresses decrease when the molten metal of magnesium alloys solidifies. In order to narrow the solidification temperature width, it is required to increase the solidus temperature of magnesium alloys and to decrease the liquidus temperature.

[0016] According to the surveys and studies carried out by the present inventors, the solidus temperature of the present magnesium

## Claim Rejections - 35 USC § 103

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c ) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 3, 4, and 7-8 are rejected under 35 U.S.C. § 103 as being unpatentable over USP 4997622 to Regazzoni et al (col. 1, lines 5-35 and col. 8, lines 45-66) or USP 5073207 to Faure et al (PTO-1449, col. 1, line 40 to col. 2, line 5 and Col. 4, Table 1, Test No. 1).

Cited references disclose(s) the features including the claimed Mg based alloy compositions. Therefore, when prior art compounds essentially "bracketing" the claimed compounds in structural similarity are all known, one of ordinary skill in the art would clearly be motivated to make those claimed compounds in searching for new products in the expectation that compounds similar in structure will have similar

properties. In re Gyurik, 596 F.2d 1012, 1018, 201 USPQ 552, 557 (CCPA 1979); See In re May, 574 F.2d 1082, 1094, 197 USPQ 601, 611 (CCPA 1978) and In re Hoch, 57 CCPA 1292, 1296, 428 F.2d 1341, 1344, 166 USPQ 406, 409 (1970). Therefore, it would have been obvious to one of ordinary skill in the art to select any portion of range, including the claimed range, from the broader range disclosed in a prior art reference because the prior art reference finds that the prior art composition in the entire disclosed range has a suitable utility. Also see MPEP § 2131.03 and § 2123. With respect to the instant claim 3 that the ratio is overlapped by the cited references because the claimed proportions of Al and Ca have been disclosed.

With respect to the Ca to Al ratio that the claimed proportions of Ca and Al are overlapped by said elements of cited references. Therefore, the ratio would have been overlapped. Furthermore, it is well settled that there is no invention in the discovery of a general formula if it covers a composition described in the prior art, In re Cooper and Foley 1943 C.D. 357, 553 O.G. 177; 57 USPQ 117, Taklatwalla v. Marburg, 620 O.G. 685, 1949 C.D. 77, and In re Pilling, 403 O.G. 513, 44 F(2) 878, 1931 C.D. 75. In the absence of evidence to the contrary, the selection of the proportions of elements would appear to require no more than routine investigation by those ordinary skilled in the art. In re Austin, et al., 149 USPQ 685, 688.

With respect to the properties as recited in instant claim 4 which are material properties. Thus, it would have been inherently possessed by the material of cited references. The product by process steps in instant claim 7 are no more than essential steps the required to form an alloy. It is known in the casting art that casting is done at

least at temperatures above "molten"/liquidus temperature of at least part of cast material. Moreover, the invention defined in a product-by-process claim is a product, not a process. In re Bridgeford, 357 F. 2d 679, 149 USPQ 55 (CCPA 1966) and MPEP § 2113.

Claims 1, 3, 4, and 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 09-271919 in view of USP 4997622 to Regazzoni et al.

JP 09-271919 in Table 1, inventive examples 4, 7, and 12 disclose3 claimed composition and Ca/Al ratio (also [0004]).

Solidus temperature as recite in instant claim 4 is material property; therefore, it would have been inherently possessed by material of cited reference. The casting steps in instant claim 7 read on injection and semimelting castings. It is known in the casting art that casting is done at least at temperatures above "molten"/liquidus temperature of at least part of cast material. Moreover, the invention defined in a product-by-process claim is a product, not a process. In re Bridgeford, 357 F. 2d 679, 149 USPQ 55 (CCPA 1966) and MPEP § 2113. It is the patentability of the product claimed and not of the recited process steps which must be established. See In re Brown, 459 F. 2d 531, 173 USPQ 685 (CCPA 1972). The guidance that has been provided by court on this matter is

[i]f the product in a product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.

See *In re Thorpe*, 777 F.2d 695, 227 USPQ 964, 966 (Fed. Cir. 1985). When applicant's and prior art's products are to be identical or substantially identical, the burden shifts to applicant to provide evidence that the prior art product does not inherently possess the claimed properties. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977); *In re Fessmann*, 489 F.2d 742, 745 180 USPQ 324, 326 (CCPA 1974); and *In re Fitzgerald*, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980).

JP 09-271919 does not disclose the grain size. However, Regazzoni in col. 8, lines 45-66 teaches fine grain would improve mechanical properties in the same field of endeavor or the analogous metallurgical art. Therefore, it would have been obvious to one having ordinary skill in the art of the cited references at the time the invention was made to produce fine grain Mg based alloy as taught by Regazzoni in order to improve/provide mechanical properties. *In re Aller*, et al., 105 USPQ 233.

### ***Response to Arguments***

Applicant's arguments filed February 2, 2007 have been fully considered but they are not persuasive.

Applicants argue that " ~~and/or Ca and optionally Mn. See Regazzoni et al., col. 1, ll. 10-14.~~ The Regazzoni invention is wholly directed to achieving improved stress, strain and corrosion resistant properties by adding ~~Ca to known commercial alloys identified in the specification by ASTM commercial~~." In response to applicants' said argument the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious and inherent. Moreover, there is no property cited in any rejected claims.

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designations AZ31, AZ61, AZ80, AZ91 and AZ92. See Regazzoni et al., col. 2, ll. 58-65. Regazzoni describes these standard compositions as "starting materials" containing Al (2-11%), Zn (0.2-3%) and Mn (0.1-0.6%) and explains that "the addition of calcium . . . makes it possible to improve the characteristics of the magnesium-based alloys, in particular those containing Al and/or Zn and/or Mn . . ." See Regazzoni et al., col. 2, l. 58-col. 3, l. 16; col. 3, ll. 44-46. The Regazzoni disclosure further teaches a process for obtaining these alloys and claims both the magnesium-based alloys described above as well as the stated process. See Regazzoni et al., col.

Applicants' argue that " 10, l. 23-col. 12, l. 21.

" But,

it is found inconsistent with the teaching of said reference. Minimum 0.2 wt.% Zn is required when no Ca is added. See col. 2, lines 48-57 below:

In the case where there is no Ca, the alloy has the following preferred composition by weight:

50

|            |          |
|------------|----------|
| aluminum:  | 2-11%    |
| zinc:      | 0.2-12%  |
| manganese: | 0.1-0.6% |

55

with the content of principal impurities always being the same, and the rest being magnesium.

## 3

Thus the alloys that are of particular interest are 5 those containing calcium having the following compositions by weight:

|           |        |    |
|-----------|--------|----|
| aluminum: | 2-11%  | 10 |
| zinc:     | 0-12%  |    |
| Mn:       | 0-0.6% |    |
| calcium:  | 0.5-7% |    |

Moreover, Regazzoni teaches " with the content of principal impurities always being 15 ,,, the same and the rest being magnesium.

Clearly, there is no teaching in Regazzoni to achieve a magnesium-based alloy Applicants argue that "with improved heat-resistance and castability. Regazzoni teaches improved mechanical strength ." First, there

are no measurable heat-resistance and castability properties cited in any rejected claims. Second, there is no factual evidence to substantiate claimed composition has unexpected heat-resistance and castability properties.

Applicants' argument in paragraph bridging pages 5-6 of instant remarks is noted. But, it is found inconsistent with claimed 0.7wt.%Mn that is recited in instant

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~~extreme point for crack or fracture during casting.~~ Moreover, when Mn in an amount of over 0.5% by mass is contained in the magnesium alloy, creep characteristics of the alloy are not significantly improved. Thus, Applicants have discovered that an amount of Mn around 0.5% in claim 1 ( ). Nonetheless, as shown from above paragraph, Regazzoni teaches Mn up to 0.6 wt.% and within claimed 0.7 wt.% upper limit.

Applicants' argument in paragraph bridging pages 6-7 of instant remarks is noted. But, applicants fail to provide factual evidence to show claimed 0.2 to 0.7 wt.% Mn is critical.

Applicants' argument with respect to Faure is noted. But, the responses in Regazzoni are reiterated to respond argument to Faure.

Applicants argue that "the '919 patent fail to teach or suggest that 0.2% to 0.7% by mass of Mn is critical to achieving a "

Applicants' attention is directed to Table 1 of said reference below:

|       | Al<br>(重量%) | Ca<br>(重量%) | Mn<br>(重量%) | その他<br>(重量%) |
|-------|-------------|-------------|-------------|--------------|
| 実施例1  | 3.0         | 3.0         | 0.2         | --           |
| 実施例2  | 3.0         | 1.0         | 0.2         | --           |
| 実施例3  | 3.0         | 5.0         | 0.2         | --           |
| 実施例4  | 4.0         | 5.0         | 0.2         | --           |
| 実施例5  | 4.0         | 1.0         | 0.2         | Mn1.0        |
| 実施例6  | 5.0         | 1.0         | 0.2         | Mn2.0        |
| 実施例7  | 5.0         | 7.0         | 0.2         | --           |
| 実施例8  | 6.0         | 1.0         | 0.2         | --           |
| 実施例9  | 6.0         | 5.0         | 0.2         | Zn0.7        |
| 実施例10 | 6.0         | 1.0         | 0.2         | Zn0.7        |
| 実施例11 | 6.0         | 7.0         | 0.2         | --           |
| 実施例12 | 6.0         | 7.0         | 0.2         | --           |

that examples 4, 7, and 12 have anticipated the claimed composition and Ca/Al ratio as recited in instant claim 1 – including the amended Mn 0.2 wt.%.

## Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

JP 2000-319744 submitted in IDS on February 26, 2007 by applicants has shown the claimed Mg based alloy composition is known in the art of cited references. JP 2000-319744 is considered as cumulative reference.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Applicant is reminded that when amendment and/or revision is required, applicant should therefore specifically point out the support for any amendments made to the disclosure. See 37 C.F.R. § 1.121.

**Examiner Correspondence**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to S. Ip whose telephone number is (571) 272-1241. The examiner can normally be reached on Monday to Friday from 5:30 A.M. to 2:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Roy V. King, can be reached on (571)-272-1244.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

*S. Ip*  
SIKYIN IP  
PRIMARY EXAMINER  
ART UNIT 1742

S. Ip  
April 15, 2007